



PATENT COOPERATION TREATY

EO/US
PCT/IB98/01323

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing:

18 February 1999 (18.02.99)

International application No.:

PCT/IB98/01323

Applicant's or agent's file reference:

International filing date:

04 August 1998 (04.08.98)

Priority date:

04 August 1997 (04.08.97)

Applicant:

PHILLIPS, Carl, Alexander et al

1. The designated Office is hereby notified of its election made:



in the demand filed with the International preliminary Examining Authority on:

11 November 1998 (11.11.98)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was



was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer:

J. Zahra

PATENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference J25237W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/IB 98/ 01323	International filing date (day/month/year) 04/08/1998	(Earliest) Priority Date (day/month/year) 04/08/1997
Applicant MARS, INCORPORATED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 98/01323

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G07F7/08 G07F9/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	WO 96 08798 A (GEMPLUS) 21 March 1996 see abstract; claims; figures see page 9, line 20 - page 14, line 17 ---	1,10 2
Y A	EP 0 619 564 A (PITNEY BOWES) 12 October 1994 see abstract; claims; figures 10-12 see column 20, line 20 - line 45 ---	1,10 2-4
A	EP 0 092 416 A (MITA INDUSTRIAL) 26 October 1983 see abstract; claims; figure 5 ---	1-4,10
A	EP 0 196 192 A (IMPERIAL OIL) 1 October 1986 see abstract; claims; figures 1,2 see page 6, line 3 - line 24 --- -/--	5,6,8,9, 11



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"g" document member of the same patent family

Date of the actual completion of the international search

15 March 1999

Date of mailing of the international search report

22/03/1999

Name and mailing address of the ISA

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Authorized officer

David, J

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 98/01323

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category ²	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 416 958 A (FORTRONIC) 13 March 1991 ----	
A	DE 38 02 186 A (NSM-APPARATEBAU) 11 May 1989 ----	
A	EP 0 555 683 A (PAYTRON) 18 August 1993 ----	
A	GB 2 083 259 A (OMRON TATEISI ELECTRONICS) 17 March 1982 ----	
A	GB 2 296 361 A (JPM INTERNATIONAL) 26 June 1996 ----	
A	EP 0 109 758 A (MARS) 30 May 1984 -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 98/01323

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9608798	A	21-03-1996	FR 2724748 A AU 3475695 A ZA 9507809 A	22-03-1996 29-03-1996 07-05-1996
EP 0619564	A	12-10-1994	US 4802218 A EP 0619563 A EP 0619565 A AT 116778 T AT 175512 T AT 160456 T AT 160039 T AU 605443 B AU 7961287 A CA 1320578 A CA 1326911 A CA 1335839 A CA 1296809 A DE 3750958 D DE 3750958 T DE 3752138 D DE 3752138 T DE 3752146 D DE 3752146 T DE 3752247 D DK 228888 A EP 0294397 A EP 0740275 A FI 882047 A,B, JP 1500863 T JP 2661932 B NO 300660 B WO 8801818 A US 4864618 A US 4900904 A US 4900903 A	31-01-1989 12-10-1994 12-10-1994 15-01-1995 15-01-1999 15-12-1997 15-11-1997 10-01-1991 24-03-1988 20-07-1993 08-02-1994 06-06-1995 03-03-1992 16-02-1995 08-06-1995 11-12-1997 26-03-1998 02-01-1998 09-04-1998 18-02-1999 17-06-1988 14-12-1988 30-10-1996 02-05-1988 23-03-1989 08-10-1997 30-06-1997 10-03-1988 05-09-1989 13-02-1990 13-02-1990
EP 0092416	A	26-10-1983	JP 58182779 A JP 1816361 C JP 5022234 B JP 58191062 A DE 3377825 A DE 3382443 A EP 0208340 A US 4501485 A	25-10-1983 18-01-1994 26-03-1993 08-11-1983 29-09-1988 05-12-1991 14-01-1987 26-02-1985
EP 0196192	A	01-10-1986	US 4608486 A AU 5522886 A CA 1263894 A JP 61276061 A	26-08-1986 02-10-1986 12-12-1989 06-12-1986
EP 0416958	A	13-03-1991	EP 0416960 A PT 95219 A	13-03-1991 29-05-1992
DE 3802186	A	11-05-1989	NONE	
EP 0555683	A	18-08-1993	IT 1260254 B AT 173349 T DE 69321978 D	02-04-1996 15-11-1998 17-12-1998

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 98/01323

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2083259	A	17-03-1982	JP 1598773 C	28-01-1991
			JP 2017827 B	23-04-1990
			JP 57010869 A	20-01-1982
			GB 2137792 A,B	10-10-1984
			HK 78785 A	18-10-1985
			HK 94885 A	29-11-1985
			US 4438326 A	20-03-1984
<hr/>				
GB 2296361	A	26-06-1996	NONE	
<hr/>				
EP 0109758	A	30-05-1984	AT 31830 T	15-01-1988
			AU 569850 B	25-02-1988
			AU 2027083 A	03-05-1984
			CA 1222824 A	09-06-1987
			DE 3375240 A	11-02-1988
			GB 2129173 A,B	10-05-1984
			GB 2172720 A,B	24-09-1986
			HK 20393 A	19-03-1993
			JP 2015504 C	19-02-1996
			JP 7013824 B	15-02-1995
			JP 59121468 A	13-07-1984
			US 4611205 A	09-09-1986

09/46392919

PATENT COOPERATION TREATY

PCT

REC'D 03 JUN 1999

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference J25237WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IB98/01323	International filing date (day/month/year) 04/08/1998	Priority date (day/month/year) 04/08/1997
International Patent Classification (IPC) or national classification and IPC G07F7/08		
Applicant MARS, INCORPORATED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 11/11/1998	Date of completion of this report 31.05.99
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. (+49-89) 2399-0 Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer Houillon, J-C Telephone No. (+49-89) 2399 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IB98/01323

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-10 as originally filed

Claims, No.:

1-10 as originally filed

Drawings, sheets:

1/1 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
- ☒ claims Nos. 9.

because:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IB98/01323

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 9 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos. .

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IB98/01323

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-8,10,11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8,10,11
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-8,10,11
	No:	Claims	

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

Claim 9 contains a reference to the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.

Re Item IV

Lack of unity of invention

The separate inventions are:

- 1 downloading preventing card (claims 1-5, 10).
- 2 test card (claims 6-8, 11).

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

The prior art disclosed in GB-A-2296361 corresponds to the features of the preamble of claim 1. The problem with such accumulated value downloading cards consists in that these cards could be lost or stolen. Reconfiguring each machine would require a specialist and could take a considerable time. This problem is solved by the features of claims 1 and 10.

The application also relates to another problem which consists in that test cards generally store a significant amount of money in order to repeatedly test the vending machines. Such cards could also be lost or stolen. None of the documents cited in the procedure relates to this problem. This problem is solved by the features of claims 6 and 11.

The requisite unity of invention (Rule 13.1 PCT) therefore no longer exists inasmuch as a inventive technical relationship does not exist between these problems which are uniquely linked by the loss or the theft of a card.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The prior art disclosed in GB-A-2296361 corresponds to the features of the preamble of claim 1. The problem with such accumulated value downloading cards consists in that

these cards could be lost or stolen. Reconfiguring each machine would require a specialist and could take a considerable time.

Thus, the use of a card which inhibits any downloading by each vending machine will temporarily solve the problem of a stolen or lost downloading card.

This solution is not suggested by the cited prior art.

Thus, the subject-matter of claims 1 and 10 involves an inventive step.

The problem related to the subject-matter of claims 6 and 11 and its solution are neither known nor suggested by the cited prior art.

Thus, the subject-matter of claims 6 and 11 involves an inventive step.

The dependent claims relate to further embodiments of the subject-matter of the independent claims and also involve an inventive step.

Re Item VII

Certain defects in the international application

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the document GB-A-2296361 whose disclosed prior art corresponds to the preamble of claim 1 is not identified in the description.

Independent claim 10 is not, as it is made in claim 1, in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document GB-A-2296361) being placed in a preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in a characterising part (Rule 6.3(b)(ii) PCT).

The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).



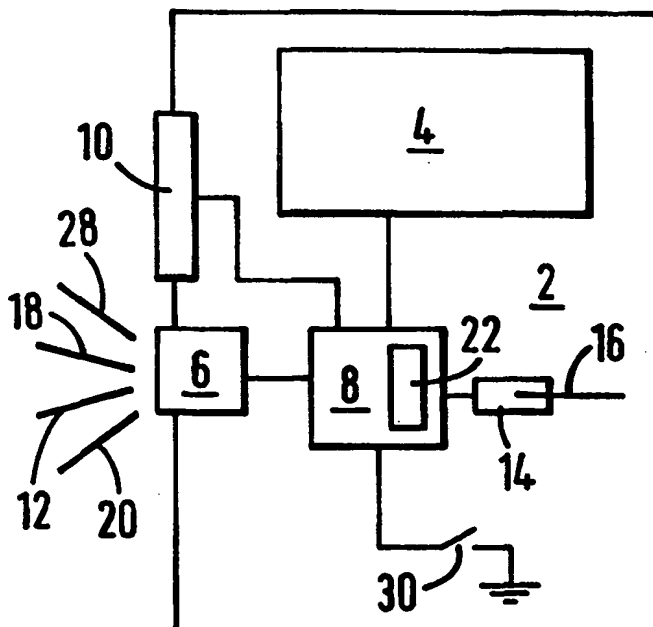
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G07F 7/08, 9/08		A2	(11) International Publication Number: WO 99/08236
			(43) International Publication Date: 18 February 1999 (18.02.99)
(21) International Application Number: PCT/IB98/01323 (22) International Filing Date: 4 August 1998 (04.08.98) (30) Priority Data: 9716490.9 4 August 1997 (04.08.97) GB (71) Applicant (for all designated States except US): MARS, INCORPORATED [US/US]; 6885 Elm Street, McLean, VA 22101-3883 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): PHILLIPS, Carl, Alexander [US/US]; 404 Barker Drive, West Chester, PA 19380 (US). MCLAUGHLIN, Dave [US/US]; 147 Bryn-Mawr Avenue, Landsdowne, PA 19050 (US). (74) Common Representative: MARS, INCORPORATED; 26 Caxton Street, London SW1H 0RJ (GB).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published Without international search report and to be republished upon receipt of that report.	

(54) Title: METHOD AND APPARATUS FOR PERFORMING TRANSACTIONS

(57) Abstract

A machine for use in carrying out transactions, such as a vending machine, accepts payments by reducing the value of credit data stored on a card. The accumulated total of payment received is stored in an internal memory, for example on another card. This value is transferred only to authorised downloading cards. A stop card can be used to prevent future downloading. A test card can be used to enable the machine to perform services or dispense products without a resultant loss in the credit stored on the card.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

METHOD AND APPARATUS FOR PERFORMING TRANSACTIONS

This invention relates to a method and apparatus for performing a
5 transaction. It is particularly, but not exclusively, applicable to machines for
vending products or services, such as beverage dispensers, food dispensers,
payphones, gaming machines, etc. It is, however, also applicable to other
machines such as currency dispensers, and machines simply for accepting
payment, such as at a terminal in a shop.

10 It has been proposed that such machines should accept payment by
means of "smart cards", i.e. payment tokens, generally credit-card shaped and
sized, containing a memory and usually a microprocessor, which are machine-
readable. It has also been proposed that certain types of such cards should
store a credit value, which can be replenished in exchange for the owner
15 making a payment, and which is diminished in accordance with the value of a
product or service received by the owner. The present invention relates to
such cards. The term "card" will be used herein, but it is to be noted that this
is intended to cover memory-containing tokens which need not be credit-card
shaped and sized.

20 For convenience, all such machines are referred to in the following as
"vending machines".

The owner of a vending machine or the like which receives payment in the form of credit received from cards needs a way of retrieving that payment from the vending machine. One proposal is that the vending machine should store an accumulated value representing the total credit deducted from the cards in payment for products or services. An operator or serviceman would be provided with means for reading out this accumulated value and storing it in a removable device, preferably a special smart card, the stored accumulated value being reset at the same time. The device can then be presented to a bank in exchange for the value stored therein.

This is a particularly convenient technique, because it uses the same technology as already exists for reading credit data from, and writing credit data to, a smart card. It is necessary in these circumstances, though, to store information which is used to identify those special cards which are used by operators or servicemen in order to retrieve the accumulated credit data, so that this data is only given to authorised people.

One problem exists in that there is a possibility that a special card may be lost or stolen. Its unauthorised use would result in the loss of all the value stored in one or more vending machines, and, possibly, the use of the device which has collected the accumulated credit in other vending machines for obtaining products or services.

To deal with this problem, it is necessary to reconfigure each vending machine whenever one of the special cards is lost or stolen, so that all the

relevant vending machines will no longer recognise these as authorised cards and will not transfer the accumulated credit data to those cards. However, reconfiguration is a relatively skilled job, using specialist equipment, and therefore it can take some considerable time until all the machines are reconfigured.

According to one aspect of the invention, a machine for accepting payment by diminishing the value of credit data stored on a card is operable to maintain a record of the accumulated credit value from a plurality of transactions, the machine storing identification data and being operable to use such data to recognise a card as a credit-downloading device, and thereafter to transfer the accumulated value to the credit-downloading device, the information data further including data to enable the machine to recognise a card as a downloading-preventing device, the machine being operable to prevent the downloading of accumulated credit data in response to recognising such a device.

Using these techniques, once a special downloading-card is lost or stolen, the owner of the vending machines can immediately issue a serviceman with a downloading-preventing card, i.e. a card with a predetermined identification number, and the serviceman can then visit the vending machines and prevent unauthorised downloading of data simply by inserting this card. This special downloading-preventing device will be referred to herein for convenience as a "stop card". Preferably, it is read using

the same card reader as is used for ordinary transactions, which is also preferably used for transferring accumulated data to the special downloading cards.

5 The inhibiting of downloading can take place by setting a flag within the machine, which is checked prior to each downloading operation. Alternatively, or additionally, this could be done by clearing the identifying-information used to identify the downloading cards, and/or by altering flags associated with the identification information.

10 It is envisaged that the use of the stop card for inhibiting downloading can be carried out quickly, easily and inexpensively. The machines can thereafter be reconfigured at a convenient timing, without worrying about unauthorised downloading of credit data.

15 A further problem for owners of vending machines of the type generally described above is the fact that, in order to perform testing, a serviceman generally has to be provided with a card storing a significant amount of value so that he can repeatedly initiate vending operations for testing purposes. These cards are therefore intrinsically valuable, and are open to misuse and represent a significant loss if stolen.

20 According to another aspect of the invention, there is provided a transaction machine which is operable to accept payment in the form of credit value transferred from a card, the machine storing information to enable it to recognise a special test card, and being operable in response to recognising

such a card to vend a product or perform a service without requiring payment from the test card. The machine can either deduct the payment value from the test card prior to vending the product or performing the service, and then refund the value, or can vend a product or perform a service without deducting credit data from the card. The former is preferred, because it tests more of the conventional operations of the machine.

According to this aspect of the invention, the test card need not have any stored credit data and thus would have no intrinsic value, or if it does store credit data this can be limited to the value required for a single transaction. Furthermore, the "free vending" operation would be allowed only in those machines which store the appropriate identification data. Accordingly, the consequences of misuse or loss of the test card are substantially reduced.

If desired, the "free vending" operation can take place only after the serviceman has switched the machine into a test mode, for example using a key. Additionally, or alternatively, the machine can be arranged to store an indication of how many free vends have been provided.

An arrangement embodying the invention will now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows schematically a vending machine in accordance with the invention;

Figure 2 illustrates the contents of a memory storing registration information; and

Figure 3 is a flowchart of the operation of the machine.

Referring to Figure 1, a vending machine 2 has a product vending
5 section 4, a card reader 6, a control unit 8 and an input/output unit 10
comprising a display and a keyboard. A customer inserts a smart card such as
that shown at 12 into the card reader 6. The card reader 6 then reads the credit
value from the card 12 and the control unit 8 causes this to be displayed on the
display of the unit 10. The customer can then operate the keypad of the unit
10 10 in order to select a product for vending. Before the product is vended, the
value stored on the card 12 is cancelled and an amount corresponding to the
initial value minus the value of the vend is written onto the card 12.

The machine 2 stores an accumulated credit value corresponding to the
total amount deducted from the cards inserted into the machine. In the present
15 embodiment this is achieved using an interface unit 14 in the form of a second
card reader, and an internal smart card 16. Each time a value is deducted from
an inserted card 12, that value is added to the credit stored on the internal card
16.

When an operator wishes to retrieve the payment made by the
20 customers using the machine, a special downloading card 18 is inserted into
the card reader 6. This special card is recognised by the control unit 8, which
then causes the amount stored on the internal card 16 to be added to the

amount currently stored on the downloading card 18, and the amount stored on the card 16 to be reduced to zero. The downloading card 18 can then be taken away and ultimately handed into a bank in exchange for the amount stored thereon.

5 In the event that a downloading card 18 is lost or stolen, a serviceman is given a special stop card 20 which he takes to each of a number of vending machines in turn, and inserts it into the card reader 6 of each machine. This is recognised by the unit 8, and is used to disable the downloading function of the machine. The control unit 8 has a memory 22, the contents of which are
10 illustrated schematically in Figure 2. The memory stores a plurality of identification numbers indicated at 24 and, associated with each identification number, a flag 26. Whenever a card is inserted either into the card reader 6 or the interface unit 14, this memory is checked to determine whether an identification number stored by the card matches any of those in the memory
15 22. If so, then the machine takes appropriate action depending upon the flag 26 associated with that card.

In particular, the unit 8 will only accept as valid a card 16 which has associated therewith a flag indicating that it is valid for internal use (such flags being indicated as "I" in Figure 2).

20 If a serviceman wishes to test the apparatus, he can do this using a special test card 28 which is inserted into the card reader 6. Preferably, prior to the testing operation, the serviceman unlocks a cabinet of the vending

machine and operates a switch 30 (which may be operated automatically by the unlocking and/or opening of the cabinet). Upon insertion of the card 28, the unit 8 reduces the value on the card 28 and adds it to that on the card 16, as usual, and permits a vend. However, following the vend, the value is then
5 taken off the internal card 16 and added to that stored on the test card 28, so that the original value is restored. The value is thus held in escrow during the transaction by the internal card 16.

Referring to Figure 3, the control unit 8 operates as follows upon insertion of a card in the card reader 6.

10 After the start operation 300, the unit tests that the card is valid at step 302, and at the same time reads its identification number. Assuming that the card is valid, the program proceeds to step 304 to check whether the identification number is stored in the memory 22. If not, a conventional vend operation, including reading of the credit data, re-writing of reduced credit
15 data and vending of a product, takes place at step 306.

If the identification number is recognised, the program proceeds to step 308 to test whether the flag 26 associated with the identification number is "D" representing a downloading card 18. If so, a downloading operation takes place at step 310, resulting in the credit on the card 16 being reduced to
20 zero, and that on the card 18 being increased correspondingly.

If the identification flag 26 is not "D", the program proceeds to step 312 to check whether it is "S", corresponding to a stop card 20. If so, the

program proceeds to step 314, where the control unit 8 alters all the flags "D" to some other value, e.g. "X". Alternatively, the unit 8 clears the contents of all memory locations 24 corresponding with flags "D". Either operation would ensure that future insertion of any downloading cards will be ineffective. As a
5 further alternative, an internal flag within the program routine could be altered so that steps 308 and 310 (or just 310) are omitted in future executions of the program.

If, at step 312, the flag is not recognised to be "S", the program proceeds to step 316. Here, the unit 8 checks whether the flag corresponds to
10 "T", indicating a test card 28. If so, the program proceeds to a vend operation 318, corresponding to the vend operation 306 described above. Following that vend operation, at step 320, the amount deducted from the card during step 318 is refunded, as described above.

If desired, the program could check that the switch 30 has been
15 operated (indicating that the machine has been switched to a test mode) and perform steps 318 and 320 (or step 320) only if this condition is detected.

The program routine terminates at step 322 if the card is found invalid (at step 302), after a vending operation (at step 306), after the appropriate operation following detection of a flag "D", "S" or "T", or if no valid flag is
20 detected.

If a stop card 20 has been used, then an appropriately authorised serviceman can, at a later date, restore the downloading option by, e.g.,

connecting to the machine a computer or hand-held terminal. This will restore any flags altered by the routine 314, but erase identification information relating to the stolen or lost downloading card. To facilitate this operation, and avoid the need for the computer or terminal to store all the identifying information for other authorised downloading cards, it is preferred that step 5 314 should not erase this identifying information.

If desired, the test card 28 can store an expiry date, and the machine can be arranged to allow a "free vend" only after checking that this expiry date has not been passed. Additionally or alternatively, the card may store a number which represents the number of permitted "free vends" and which is 10 checked by the machine, and altered each time a "free vend" occurs.

CLAIMS:

1. A machine for use in transactions, the machine being operable to accept payment by diminishing the value of credit data stored on a card, the machine being operable to maintain a record of the accumulated value of the payments made, and having a memory storing identification data, the machine being operable to use the stored data to recognise a card as a card authorised for the purposes of downloading, and in response thereto to transfer the accumulated value to the card;

characterised in that the machine is further operable to use the identification information to recognise that a card is authorised for the purpose of inhibiting downloading, and in response thereto to prevent transfer of accumulated values to cards authorised for downloading.

2. A machine as claimed in claim 1, wherein the machine is operable to check data identifying a card against stored identifying data representing a plurality of cards and, if a match is found, to permit downloading if a flag associated with the matching identifying data indicates that the card is authorised for downloading, and wherein the machine is operable, in response to recognising a card as being authorised for inhibiting downloading, to alter the flags associated with the data identifying cards authorised for downloading.

3. A machine as claimed in claim 1, wherein the machine is operable, in response to recognising a card as being authorised for inhibiting downloading, to reset the memory locations containing data identifying cards authorised for downloading.

5

4. A machine as claimed in any preceding claim, wherein the machine is operable, in response to identifying a card as being authorised for inhibiting downloading, to set a flag so that future transfer of accumulated values to a card authorised for downloading is inhibited irrespective of whether or not the memory stores data identifying that card as authorised for downloading.

10

5. A machine as claimed in any preceding claim, wherein the machine is further operable to use the identification data to recognise a card as authorised for use as a test card, and in response thereto to allow an operation normally performed by the machine in exchange for payment to be carried out without requiring a resultant loss in the credit stored on the test card.

15

6. A machine for use in performing transactions, the machine being operable to accept payment by reducing the value of credit data stored on a card, the machine storing identification data and being operable to use the identification data to recognise a received card as being authorised for test

20

purposes, and in response thereto to permit an operation normally requiring payment to be carried out by the machine without a resultant reduction in the credit data stored by the test card.

5 7. A machine as claimed in claim 5 or 6, wherein the machine is operable in response to recognising that a card is authorised for test purposes to reduce the credit value stored on the card as payment, and then to restore the credit value.

10 8. A machine as claimed in claim 5, 6 or 7, wherein the machine is arranged to enable said operation without requiring a resultant loss in the credit on the card only if the machine is first switched into a test mode.

 9. A machine substantially as herein described with reference to
15 the accompanying drawings.

 10. A method of operating a vending machine which is operable to accept payment by diminishing the value of credit data stored on a card, and which is further operable to recognise a card as being authorised for the
20 purposes of downloading and in response thereto to transfer to the card a record of the accumulated value of payments made, the method comprising causing the machine to read a card storing data identifying the card as being

authorised for the purpose of inhibiting downloading, the machine thereafter being inoperable for performing the downloading operation.

11. A method of operating a machine which is operable to accept
5 payment by reducing the value of credit data stored on a card, the method comprising the step of testing the machine by causing the machine to read a card storing data identifying the card as being authorised for test purposes, the machine responding thereto by permitting an operation normally requiring payment to be carried out by the machine without a resultant reduction in the
10 credit data stored by the test card.

FIG. 1

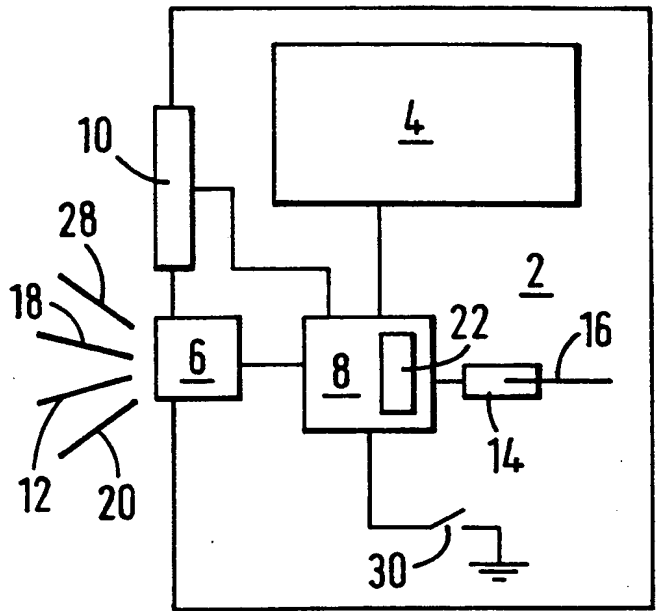


FIG. 2

1 0 9 4 5 6 9	S
X X X X X	S
-----	-
-----	-
7 6 8 3 4 2 8	D
X X X X X	D
-----	-
-----	-
5 6 9 2 0 1 4	I
X X X X X	I
-----	-
-----	-
2 9 0 7 6 4 3	T
X X X X X	T
-----	-
-----	-

FIG. 3

